Python Sample Final Exam

Note: The students should receive this test on paper, but answer the questions on their computer (the final test will be in the same format). Students will have 1 hour and an additional 5 minutes reading time to do the exam.

Question 1

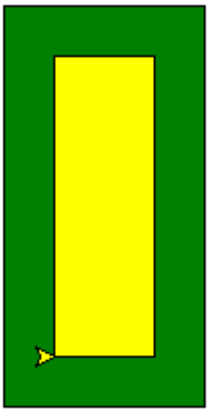
Write code, using a loop, to print out the following sequence.

```
1, 2, 4, 8, 16, 32, 64, 128, 256.
```

Your sequence should contain 9 elements and include commas, spaces and a full stop as shown.

Question 2

Use Turtle to draw the following shapes



The sides of the inner rectangle are 50pt and 150pt. The sides of the outer rectangle are 100pt and 200pt.

The distances between the left side of the outer rectangle and the left side of the inner rectangle is 25pt. The distance between the tops of the rectangles is also 25pt.

Question 3

Use the file `Q3_diving_scores.py`. This file contains the names and diving scores of 7 divers.

Sort the lists so that the divers and their scores are sorted with the highest score first and the lowest score last.

Note: make sure you maintain data integrity, each diver must have their correct score. (eg Bemet scored 9.3).

Display the results as a list, like this:

```
Diver       Dive   Medal
Lee         9.5    Gold
Kim         9.4    Silver
Bemet       9.3    Bronze
Ndomo       9.1
```

Put the name of the medal beside the name of the top three divers only.

Question 4

Write code that asks the user quiz questions based on arithmetic.

The first question should look like this.

1. What is 4 - 16?

The user then types their answer.

Check the user's answer. If the user does not enter a number, give an appropriate error message. If the user enters a number, but it is not correct, give a different appropriate error message. If the user enters the correct number, give them one point and tell them it was correct.

Stop the quiz when the user gets 3 correct answers or after 5 questions (whichever comes first). Display the number of questions and the user's score.

The questions should be:

```
1. What is 4 - 16?
2. What is 5 + 11?
3. What is 3 x 21?
4. What is 8/2?
5. What is 3 ^ 2?
```

Question 5

A company sells investment packages called units.

Ask the user how many units they wish to buy.

The cost of the units depends on how many the user purchases.

Units cost $500 each. If a user purchases more than 1000 units, the first 1000 cost $500 each and the ones over 1000 cost $450 each. If the user purchases more than 2000 units, the first 1000 cost $500, the next 1000 cost and $450 each and those over 2000 cost $420 each.

Write code to calculate the cost of the total number of shares.

Your answer should look like this.

```
How many units do you wish to purchase? 2100
Buying 2100 units will cost $992000.
```

Question 6

Students do four assessments, weighted as follows:

- Major Project, 50%
- Theory Test, 15%
- Practical Test, 25%
- Tutorial Mark, 10%

Open the file `student_weighted_marks.py`.

This file contains each student's student number, name, and their four marks, all out of 100.

Complete the function `calculate_weighted_mark`, passing it one student and the weightings.

Create another function to calculate each student's grade based on this information:

- 85+ is A
- 70+ is B
- 50+ is C
- 40+ is D
- Less than 40 is F

List each student's name, weighted mark and grade. There is no need to sort the results.

Your output should look like this.

```
Student Name    mark     Grade
Kevin-Hugh Hu   76.85      B
Serena Wills    96.95      A
```